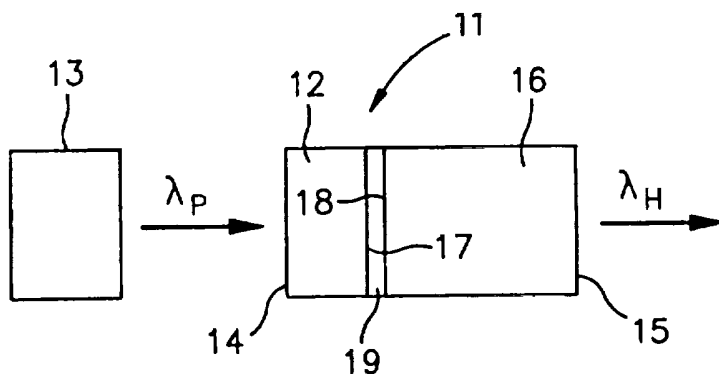




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: DEEP BLUE MICROLASER		
(57) Abstract <p>A monolithic diode pumped solid-state laser (11) comprising as the laser host neodymium-doped yttrium orthovanadate (Nd:YVO₄) (12, 52) or neodymium-doped gadolinium orthovanadate (Nd:GdVO₄) (57, 67) operating on the ⁴F_{3/2} → ⁴I_{9/2} (~914 nm or ~912 nm respectively) transition, to which a suitable nonlinear optic material (16), such as potassium niobate (KNbO₃) or beta barium borate (BBO), is bonded. The nonlinear crystal gives rise to intracavity frequency doubling to ~457 or ~456 nm. The microlaser is a composite cavity formed from a gain medium crystal and a nonlinear frequency doubling material which together have four spaced parallel dielectrically coated faces (14, 17, 18, 15) and which is positioned in close proximity to a diode laser pump source (13) for phase-matched harmonic generation of blue light along an axis of propagation which lies substantially perpendicular to the two faces of the composite cavity. By employing specific doping concentration-length products of lasant material and pumping the gain medium which has a specific crystalline orientation the desired efficient blue microlaser is achieved. Alternative embodiments combine the Nd:YVO₄ and Nd:GdVO₄ elements to enhance certain output characteristics of the laser.</p>		



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 94/09393

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H01S3/109

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	PATENT ABSTRACTS OF JAPAN vol. 17, no. 104 (E-1328) 3 March 1993 & JP,A,04 291 976 (RICOH CO LTD) 16 October 1992 see abstract & US,A,5 331 650 (H.MAEDA ET AL.) 19 July 1994 see the whole document ---	1-24, 29-42, 47-51
Y	PATENT ABSTRACTS OF JAPAN vol. 17, no. 89 (E-1323) 22 February 1993 & JP,A,04 283 977 (FUJI PHOTO FILM CO LTD) 8 October 1992 see abstract & US,A,5 287 381 (H.HYUGA ET AL.) 15 February 1994 see claim 2; figures 1,2 --- -/--	1-24, 29-42, 47-51

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search 15 February 1995	Date of mailing of the international search report 01.03.95
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016	Authorized officer Galanti, M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 94/09393

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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